Ontario

ORDER NO. 87-063

OCTOBER 1987
AGDEX 420
41

Factsheet

BEEF CATTLE IDENTIFICATION

(Reprinted February 1992)

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The purpose of identifying beef cattle and keeping records is to facilitate management and selection of superior breeding stock. An accurate identification system is the key to successful performance, health and breeding record keeping.

It is highly desirable that all beef animals in a herd bear some mark or tag by which each can be positively identified. There are many different methods of livestock identification currently in use. Method of marking or identifying animals will vary according to the class of animal and the objective sought. In any system of identification, permanency and ease of recognition are of primary importance. Some types of identification may only establish or indicate ownership of an animal but may not identify the individual animals within a herd. Hot branding is a good example of a means of more commonly indicating ownership but can also be used for individual identification as well. Another example of identifying ownership would be earmarking.

A satisfactory identification system should provide the following: (1) positive and permanent identification; (2) necessary information about the animals; and (3) easy recognition.

IDENTIFICATION SYSTEMS

Successful identification systems would involve one of a number of permanent means of identification such as tattooing, freeze branding, fire branding and possibly nose printing. Electronic identification shows great potential. Where positive identification is necessary a combination of available methods may be very useful.

TATTOO

For all practical purposes, tattooing is the most satisfactory method of individual marking for identification. When properly done it is permanent, definite and not easily changed without disfiguring the animal. The tattooing of an animal is easily performed and is effective if the correct procedure is followed and the proper materials are used.

Most beef cattle registry associations require that animals registered by their associations be identified by a tattoo, shortly after birth. The tattoo is an effective method of permanent identification but does have the disadvantage of being impossible to read unless the animal is restrained in some manner. A plastic tag, with corresponding identification readable from a distance, placed in the opposite ear to the tattoo is a highly effective and accepted system of identification.

Almost all breed associations have specified the area of tattooing. For example, some beef cattle breed associations require that both the herd letters and the animal's own individual number and year letter be tattooed in the right ear. Others may require the herd letters in the right ear and the animal's own number and year letter in the left ear. Information concerning location of tattoos for purebred producers can be obtained through the various breed associations.

Registration of herd tattoo letters

For breed associations which are affiliated with the Canadian National Live Stock Records, a breeder must apply to the Canadian National Live Stock Records, Ottawa for tattoo letters to be allotted for exclusive use for tattooing animals born on his or her property. Herd letters for breeders within breed associations which are not affiliated with the Canadian National Live Stock Records must be obtained directly from the respective breed associations (e.g. Hereford, Limousin, Charolais, Maine-Anjou, Blonde d'Aquitaine, Simmental, etc.).

In addition to these herd letters there must also be tattooed in the same or other ear (depending on the requirements of the association concerned) the herd number of the animal. The herd number must be followed by a letter indicating the year of birth. The letter S will indicate the animal was born in 1984. Some past, present and future letters are:

1983 - R, 1984 - S, 1985 - T, 1986 - U, 1987 - W,
1988 - X, 1989 - Y, 1990 - Z, 1991 - A, etc.

The letters I, O, Q and V shall not be used as designating year letters.

Successful Tattooing

Equipment — tattoo pliers, small brush or rubber glove for rubbing in paste, tattoo letters, rag for cleaning ear, alcohol or chlorhexidine as a solvent to wet and remove wax, tube of paste.

Tattoo Application

Select a spot between the cartilaginous ribs well into the ear and away from hairy edges. Press pliers firmly and release, pressing the ear away from the pliers if necessary to avoid tearing the skin. If the punctures made are indistinct or ripped, leave to heal for a week and try again. Avoid hitting a rib in the ear as this causes excessive bleeding and will result in making a poor tattoo.

Apply the paste ink into the ear. Green or black paste works best with green preferred. Work the paste into the punctures with a brush or fingers using a rubber glove. Apply sufficient paste and rub until the bleeding stops.

Guidelines for Tattooing

- Best done as a calf
- Secure the head firmly

Figure 1. A plainly visible tattoo, well into the ear, away from the hairy outer edges is desired.

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- Clean the ear thoroughly with a rag soaked in alcohol or chlorhexidine which is thought to be superior to alcohol. This removes the waxy coating from the ear and cleans the ears, reducing the possibility of infection and results in a more satisfactory tattoo.
- Check the tattoos in the pliers on a piece of paper or cardboard to make sure they are the right ones.
- Make the imprint with a quick firm movement — excessive pressure is not required.
- If a mistake is made, place the proper tattoo in the opposite ear and record all tattoos in both ears on the application for registration papers.
- Place the breeders' herd letters in the top running between the first and second cartilaginous ribs of the ear.
- Don't place the tattoo on the edge of the ear in the hairy portion.
- Don't place the tattoo on a rib in the ear — place between the cartilaginous ribs.
- Don't place the paste directly on the tattoo needles. Rub or brush in the paste.
- Don't disturb the tattooed area until healing is complete.
- Don't place any kind of tag into the area of the tattoo. Use the opposite ear for tags.
- Keep tattoo equipment clean.

Some commercial cattlemen may not think that tattooing is practical but for permanent identification it should be considered by all, especially for identifying heifer calves that may be retained.

BRANDING

Branding when properly done is considered an excellent method to establish a permanent mark of identification for ownership of beef cattle and can also be used for individual identification. Brands should be no less than 3 inches in length or diameter and 4 or 5 inch brands are recommended.

Most provinces require and have provided for the recording of brands allotted for a fee with the purpose to establish a permanent and unique mark of identification for the ownership of cattle. Allotment of brands is usually for a period of several years after which they have to be renewed. (i.e. The Livestock Branding Act 1981). When recording a livestock brand an attempt should be made to record a simple brand that can easily be applied to the animal with bars or straight irons and that can easily be read on the animal.

FREEZE BRANDING (Marking)

This is a relatively new branding technique (cryogenic branding) and is generally considered to be an effective and positive identification system when properly done. Freeze marking is easily applied, permanent, virtually painless and an unalterable means of identification. It involves a process of using superchilled branding irons, to kill the color producing cells which results in a white hair number or letter. This method of branding reduces hide damage and can be used to completely remove the hair if the irons are held on the animal long enough. Such a method may be used on white haired animals. Freeze branding is considered to be an excellent primary means of identification.

Coolants

Several cooling solutions can be used with success:

(a) *Dry ice and 95% alcohol* Pour enough 95% alcohol (isopropyl, ethyl or methyl alcohol) into an insulated container to completely cover the head of the branding irons. Add chipped dry ice — to adequately chill the alcohol. To maintain the correct temperature, it is necessary to have dry ice in solution at all times.

Advantages of dry ice method:

(1) Results are more consistent than those obtained with liquid nitrogen.

(2) Overexposures of 2 to 5 seconds are not critical.

(3) Digits applied are legible from branding until the regrowth of white hair appears.

Disadvantages:

(1) Dry ice may be difficult to obtain.

(2) It is difficult to maintain the proper temperature.

(3) The coolant solution has a tendency to absorb moisture from the atmosphere which reduces the effectiveness of the solution.

(4) Requires 60 to 90 seconds to rechill the iron after use.

(5) Requires close clipping which increases time requirements.

(b) *Liquid Nitrogen* Place liquid nitrogen in a well insulated container with an open top just large enough to accommodate the irons. Maintain enough nitrogen in the tank to cover the head of the branding irons at all times. Avoid being splashed with boiling nitrogen. As with dry ice, there will be vigorous boiling until the temperature of the irons is the same as the nitrogen.

Advantages of liquid nitrogen:

(1) Liquid nitrogen is more readily available than dry ice in most areas.

(2) Liquid nitrogen is more convenient and easier to use.

(3) Irons can be rechilled in a matter of a few seconds.

(4) Less time consuming than dry ice because of shorter exposure times.

(5) Digits applied are legible from branding until the regrowth of white hair appears in 6 to 8 weeks.

Disadvantages:

(1) Excessive exposure will result in excessive follicular and skin damage resulting in "bald" brands.

(2) Liquid nitrogen containers that are designed especially for freeze branding are rather expensive.

(3) In some areas the cost of liquid nitrogen is high.

(4) Liquid nitrogen can be dangerous if not handled with care.

Freeze branding, if properly set up, may take 3 to 10 minutes per head. It is relatively inexpensive when using dry ice. Approximately 50-75 pounds of dry ice would be required for an 8 to 10 hour day of branding. Cost may be more than doubled in some areas of liquid nitrogen is used (possible source A.I. unit).

Safety Considerations

Gloves and goggles are recommended for the protection of eyes and hands while handling dry ice or liquid nitrogen. Gloves must be used during branding.

Cooling Time

The first time the irons are cooled for approximately 20 minutes. Thereafter, the irons should cool until the bubbles rising from them in the liquid are reduced to a minimum. No less than 1 to 2 minutes should be allowed between brands with the same iron.

Clipping Hair

The hair must be clipped on the area to be branded, preferably with small animal or surgical clippers — regular show animal clippers have been less successful. Time required for branding varies with the amount of short hair remaining. The shorter the hair, the less time required.

Preparation of the clipped area

Alcohol should be applied after clipping the area to be branded and rubbed off to remove excess loose hair and dirt. A second application of liquid should take place just before the irons are applied. The alcohol is necessary for transferring heat from the animal to the irons and aids in obtaining good brands.

Application of Irons

The time varies with the coolant used, age of the animal and the clippers used. Approximately forty seconds appears to be the best time for mature cattle based on field trials using dry ice. Young cattle need 20 to 30 second brands. If surgical clippers are used, 30-second brands consistently get excellent results. When liquid nitrogen is used as the coolant 20-30 seconds is adequate for branding. For white animals allow an additional 10 to 15 seconds of exposure. This will destroy the hair and result in a "bald" or "bare" brand.

Best Branding Time

About the time a new hair coat is starting, either in spring or fall, is a good time. Successful brands have been accomplished at all times of the year, however, those done about the time a new hair coat is starting appear most rapidly. Those done after the new hair coat is on the animal may take 3 to 4 months for

white hair to appear.

The brand raises a welt on the animal as soon as the hide thaws and can be read immediately after branding. It usually is readable until the white hair appears. This may be 20 days to several months.

Equipment for Freeze Branding

(1) Freeze branding irons
(2) Hair Clippers
(3) Source of power for clippers
(4) Container with cleaning solution for clipper head
(5) Container for the liquid coolant preferably aluminum and large enough to contain all the irons. A special cooler is available for liquid nitrogen but foam picnic coolers also work well.
(6) Dry ice — if liquid nitrogen is used no dry ice is needed
(7) Container for solvent
(8) Cloth
(9) Good working corrals
(10) Stop watch or watch with second hand

Procedure Guidelines

(1) Use copper irons
(2) Reduce temperature of the liquid coolant to approximately −106°C or −157°F.
(3) Immerse the irons in the liquid coolant. Make sure liquid covers the irons completely.
(4) Allow at least 20 minutes for the irons to cool the first time.
(5) Clip area to be branded — avoid branding in the flank or paunch areas. Fine headed clippers are desirable.
(6) Soak the clipped area with solvent.
(7) Rub off the liquid.
(8) Re-soak the area and apply the cold branding irons. Shake off excess coolant solution.
(9) Apply the irons firmly with steady pressure — less time required if fine clippers are used.
(10) Time with a stop watch.
(11) Wash the clipper head in a small can of solvent after each animal is clipped.
(12) If a branding iron needs to be used twice for such double numbers as 22 or 33, allow at least a minute, preferably more for the irons to cool between brandings.

Freeze brands have remained readable on some animals for 5 to 6 years. Some further testing of freeze branding is thought necessary to determine if it will last the life of the animal.

Figure 2. An example of freeze branding on the rib cage.

HOT BRAND

Fire brands are satisfactory and practical for identification or ownership branding. Fire brands are quickly applied and inexpensive, producing a permanent, hair free scar in the shape of the iron used. This type of identification has the disadvantage of being hard to read especially in winter. Hair should be clipped in the fall or winter ahead of calving to make the brands completely legible.

How to Brand

Good brands can be achieved by properly heating irons, by clipping hair from the hide and by keeping irons clean at all times. Irons can be kept clean by use of a steel brush, container of oil or a pail of sand.

For best results in heating irons use a wood fire or propane (bottled) gas fire. The electric branding iron has proved to be successful when used properly.

Good brands require no more than 3 to 5 seconds of contact with the hide. Guard against branding too lightly however, as a shallow brand can disappear when the animal undergoes a seasonal change of hair.

Branding Irons

Among the most suitable materials used in making branding irons are iron, steel and stainless steel. Stainless steel is noted for its ability to withstand extreme heat without burning up. Copper irons are not generally recommended for hot branding since they can't stand extreme heat. The preferred face thickness of irons is ⅜-½ inch. Each letter or number should be mounted on its own handle, using notches or vents where letters are joined to prevent blotching. Sharp points or corners should be rounded off to avoid unnecessary injury to animals when they are being branded.

Hot Branding Tips

- The iron should be heated properly until it appears to be the color of ashes — if hair catches fire the iron is too hot.
- A branding iron must burn sufficiently to remove the hair and outer layer of skin.
- Rocking the iron assures a burn on all parts of the brand.
- Irons which are too hot blotch the brand and are hard to read.
- Simple brand patterns are best.
- A thin or burned iron shouldn't be used.
- Branding irons should not be used by inexperienced hands.
- Wet or damp cattle should not be branded.
- Do not apply a light "hair brand".
- Animals must be adequately restrained.
- Clipping the brand area may not be necessary but does improve the uniformity of brands.
- Don't brand on top of a previous brand.
- One application of the iron only.
- Guide for time of application 3 to 5 seconds.
- A light application of oil or grease to the branded area will usually aid in smoother, faster peeling.

Caution: You are only trying to burn the outer layer of skin and should burn no deeper.

NOSE PRINT

Nose printing appears to have potential as a means of identification of beef cattle. Research has shown that no two animals have an identical pattern. Cattle nose prints, like human fingerprints, are individually unique and unchanging throughout the life of the animal.

Each print is made up of ridge patterns that are long or broken. Sometimes both are present in the nose print. Nose prints also appear to be structured in lines and dots. Prints may show either one or both characteristics.

Nose patterns can be successfully lifted as prints for positive identification.

Materials and Facilities

(a) squeeze chute
(b) fast-drying India ink
(c) good quality bath towels
(d) 5 × 8 inch rubber stamp pad
(e) 5 × 8 inch card, preferably yellow

Procedure

(1) Place the animal securely in squeeze chute. Secure the head with a halter and rest its head on your left hip.
(2) Ink stamp pad
(3) Dry nose with towel
(4) Ink animal's nose with pad
(5) Roll card upward over the nose for print (use hard surface block behind card)

It is critical that inking and printing be done in less than 10 seconds after drying the nose as perspiration causes ink to smear on the card if you wait too long.

Figure 3. Tags placed properly in the ear provide a good means of identification. (1) Metal (2) Plastic Tag

EAR TAGS

Metal Tags Metal ear tags are self-piercing aluminum or steel ear tags which are inexpensive and easy to apply. The most common metal tag used is the Kurl-Lock type tag made from long wearing, bright, tin plated rust-resistant steel or colored lacquer coated steel. These tags are dependable, attach and seal with one operation and have a high retention rate. This type of tag should be placed on the top side of the ear near the head, leaving about ½ inch for growing room in the young animal. If the tag is placed in the ear too tightly on a young calf infection may result. This system provides an excellent cross reference for identification when combined with other means of identification such as plastic ear tags.

Plastic Tags There are numerous kinds of plastic or rubber-type ear tags on the market that are large and easily readable from a distance. These tags can be ordered prenumbered or as blanks with ink, allowing the user the option to number the tags. Information placed on the tag in addition to individual identification may include breed, sire and/or dam information depending on the class of cattle being identified. This type of tag should be applied according to the manufacturer's instructions. Poor retention has been reported with some of these tags. Proper placement of the tag in the ear is essential to minimizing tag loss. Availability, cost and retention will be considerations here. Producers can talk to neighbors and other cattlemen who are having success with a particular type of tagging system. Most cattle now carry these easy to read tags, and they have replaced the neck chain or rope tagging systems.

Plastic or rubber-type tags require a backup identification such as a metal ear tag and/or tattoo as a cross reference.

Another use of individual plastic ear tag identification is found in Agriculture Canada's *Beef Carcass Appraisal Service (Blue Tags)* offered to Canadian producers. This unique service can provide participating breeders, feeders, etc. with information on important value-determining characteristics of the carcasses their cattle produce. The information can help cattlemen more effectively evaluate breeding, feeding and management programs which could result in economically significant improvements in the production of beef in both quality and yield.

The system uses a specially designed colored and numbered ear tag for maintaining the identity of cattle through to slaughter.

The Blue Tags are consecutively numbered and may be purchased in any quantity through Ketchums of Ottawa. The Livestock Division maintains a file of ear tag serial numbers and the corresponding purchasers' name and address.

ELECTRONIC CATTLE IDENTIFICATION

Technology is moving very quickly in the development of an efficient and effective electronic cattle identification system.

Electronic identification is accomplished by attaching a device (chip) to an animal and identifying it with a remote scanner. The device the size and shape of a kernel of rice is attached internally or externally to the animal and would be coded with a unique code. One of the drawbacks of this particular system at present is that the scanner has to pass within inches of the device, making a restraint system necessary for the animals being identified.

The cost of the individual chips, scanner and computer equipment is fairly high. With continuing advances in technology, costs of these electronic systems will be lower in the future as production is increased.

All current forms of animal identification have their drawbacks. With electronic identification animals could be potentially identified individually with 100% accuracy by a scanner at a distance any time from birth to slaughter.

Saskatchewan Agriculture's Livestock Branch is field testing an electronic identification system using two types of transponders. One is an implant that is injected just under the skin with a modified syringe. The implant is about 1/16 of an inch in diameter and about 3/8 of an inch long. The location for the implant can be either the ear or the soft fleshy tissue on the side of the tail head. The best location is still under consideration.

The second type of transponder is a small doughnut-shaped ear tag. It can be attached using conventional Allflex pins or male face tags.

In both methods, the transponders are encoded with a 10-digit letter and number combination meaning there are 34 billion possible combinations for this system.

The potential for systems such as this is immense. The future will see systems which provide identification at a large distance, are portable and can be directly linked to computers and electronic scales.

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ISSN 0 225 7882